

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A thrust roller bearing, comprising:
a plurality of needle rollers; and
a cage for holding each said needle roller in a respective pocket for accommodating said needle roller, the cage having an upper member and a lower member for sandwiching said needle roller between them;

wherein the upper member and the lower member are subjected to caulking and are fixed to each other at a radially inner end portion and a radially outer end portion of each of them;

wherein a roller holding portion provided in said pocket has a length less than a length of said needle roller, and within a range of 30% to 80% of a length in a radial direction of said pocket;

wherein a flat portion having a height less than that of the roller holding portion, measured in a cross-section perpendicular to a plane along which the cage extends, is provided between the radially inner and outer end portions of the cage and an end portion of said needle roller; and

wherein said pocket extends to the flat portion.

2. (Withdrawn) The thrust roller bearing according to claim 1, wherein
said roller holding portion is constituted of a plurality of roller holding portions, and
a total length of the plurality of roller holding portions is within a range of 30% to 80% of a length in a radial direction of said pocket.

3. (Withdrawn) The thrust roller bearing according to claim 1, wherein
said needle roller is constituted of multiple roller rows, and
a roller holding portion having a length smaller than that of the needle roller is provided
in respective one of said multiple roller rows.

4. (Original) The thrust roller bearing according to claim 1, wherein
said needle roller is constituted of multiple roller rows, and
multiple needle roller rows are held by one common roller holding portion.

5. (Currently Amended) A cage holding a needle roller in a pocket for accommodating
said needle roller, wherein the cage has an upper member and a lower member for sandwiching
the needle roller between them;

wherein the upper member and the lower member are subjected to caulking and are fixed
to each other at a radially inner end portion and a radially outer end portion of each of them;

wherein a roller holding portion provided in said pocket has a length less than a length of
said needle roller, and within a range of 30% to 80% of a length in a radial direction of said
pocket;

wherein a flat portion having a height less than that of the roller holding portion,
measured in a cross-section perpendicular to a plane along which the cage extends, is provided
between the radially inner and outer end portions of the cage and an end portion of said needle
roller; and

wherein said pocket extends to the flat portion.

6. (Withdrawn) The cage according to claim 5, wherein
said roller holding portion is constituted of a plurality of roller holding portions, and
a total length of the plurality of roller holding portions is within a range of 30% to 80% of
a length in a radial direction of said pocket.

7. (Withdrawn) The cage according to claim 5, wherein
said needle roller is constituted of multiple roller rows, and
a roller holding portion having a length smaller than that of the needle roller is provided
in respective one of said multiple roller rows.

8. (Original) The cage according to claim 5, wherein
said needle roller is constituted of multiple roller rows, and
multiple needle roller rows are held by one common roller holding portion.

9. (Original) The cage according to claim 5, wherein
a shape of the roller holding portion formed on a right edge and a shape of the roller
holding portion formed on a left edge of a window of said pocket are asymmetrical to each other
with respect to a central axis of the window of said pocket.

10. (Original) A thrust roller bearing, comprising:
a plurality of rollers; and
a cage made of metal and holding said roller so as to sandwich the same with an upper
member and a lower member; wherein
a nitrocarburized case is formed to a depth in a range larger than 3 μ m and smaller than
100 μ m in a surface of said cage.

11. (Original) A thrust roller bearing, comprising:

a plurality of rollers; and

a cage made of metal and holding said roller so as to sandwich the same with an upper member and a lower member; wherein

in said cage, a hardened case is formed to a depth in a range larger than $3\mu\text{m}$ and smaller than $100\mu\text{m}$ in its surface,

said upper member and said lower member are superposed and bent in at least one of a radially outer side end portion and a radially inner side end portion and subjected to caulking, and

a nitrocarburized case plastically deforms in the caulked portion.

12. (Original) The thrust roller bearing according to claim 10, further comprising a rolling bearing ring positioned so as to sandwich said roller and said cage and coming in contact with said roller.

13. (Original) The thrust roller bearing according to claim 11, further comprising a rolling bearing ring positioned so as to sandwich said roller and said cage and coming in contact with said roller.

14. (Original) The thrust roller bearing according to claim 10, wherein said roller is subjected to carbo-nitriding treatment.

15. (Original) The thrust roller bearing according to claim 10, wherein said roller is constituted of multiple roller rows.

16. (Currently Amended) A cage for holding a roller, the cage comprising an upper member having a pocket for accommodating the roller and a roller holding portion in the pocket, and a lower member having a corresponding pocket and roller holding portion, to sandwich and hold the roller between the upper member and the lower member; wherein

a hardened case is formed to a depth in a range larger than $3\mu\text{m}$ and smaller than $100\mu\text{m}$ in a surface portion of said cage;

the upper member and the lower member are superposed on each other at inner and outer radial portions of their respective holding portions such that respective radially extending surfaces of the holding portions contact each other; and

the upper member and the lower member are caulked at the inner and outer radial portions of their respective holding portions such that an end portion of one of the upper and lower members surrounds a first face, an end face and a second face of an end portion of the other of the upper and lower members;

the upper member and the lower member each have a flat portion having a height less than that of their respective roller holding portions, measured in a cross-section perpendicular to a plane along which the cage extends, between inner and outer radial end portions of the member and an end portion of the roller; and

the roller holding portions have a length in a radial direction less than a length of the roller, and the pockets extend to the flat portion.

17. (Original) A cage holding a roller so as to sandwich the same with an upper member and a lower member; wherein

a hardened case is formed to a depth in a range larger than $3\mu\text{m}$ and smaller than $100\mu\text{m}$ in a surface portion of said cage,

said upper member and said lower member are superposed and bent in at least one of a radially outer side end portion and a radially inner side end portion and subjected to caulking, and

said hardened case plastically deforms in the caulked portion.

18. (Currently Amended) A thrust roller bearing, comprising:

a plurality of rollers; and

an annular cage having a plurality of pockets for holding said rollers respectively, and a roller holding portion in each said pocket;

wherein the cage has an upper member and a lower member for sandwiching said rollers between them;

wherein the upper member and the lower member are subjected to caulking and are fixed to each other at a radially inner end portion and a radially outer end portion of each of them;

wherein a flat portion having a height less than that of the roller holding portions, measured in a cross-section perpendicular to a plane along which the cage extends, is provided between the radially inner and outer end portions of the cage and an end portion of each said roller;

wherein the roller holding portions each have a length in a radial direction less than a length of each of said rollers, and the pockets extend to the flat portion;

wherein an end face of each of said plurality of rollers is an F end face, and

wherein end face accuracy is at most 30 μ m.

19. (Original) The thrust roller bearing according to claim 18, wherein

each of said plurality of rollers is arranged in each of said plurality of pockets in a single row in a radial direction of said cage.

20. (Withdrawn) The thrust roller bearing according to claim 18, wherein each of said plurality of rollers is arranged in each of said plurality of pockets in multiple rows in a radial direction of said cage.

21. (Currently Amended) A cage for holding a roller, the cage comprising an upper member having a pocket for accommodating the roller and a roller holding portion in the pocket, and a lower member having a corresponding pocket and roller holding portion, to sandwich and hold the roller between the upper member and the lower member; wherein

a hardened case is formed to a depth in a range larger than $3\mu\text{m}$ and smaller than $100\mu\text{m}$ in a surface portion of said cage;

the upper member and the lower member are superposed on each other at inner and outer radial portions of their respective holding portions such that respective radially extending surfaces of the holding portions contact each other; ~~and~~

the upper member and the lower member are spot-welded to each other;

the upper member and the lower member each have a flat portion having a height less than that of their respective roller holding portions, measured in a cross-section perpendicular to a plane along which the cage extends, between inner and outer radial end portions of the member and an end portion of the roller; and

the roller holding portions have a length in a radial direction less than a length of the roller, and the pockets extend to the flat portion.